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"THE PRINCESS" IN RELATION TO THE HIGHER EDUCATION OF WOMEN.

By Rev. CANON STOCKS, M.A. (Read before Section "A.")

John P. Stocks
(1843-1926)

It is not easy for anyone whose youth was passed in the sixties, to be an impartial critic of "The Princess." Tennyson's influence was then very potent. The charm of his versification, the graceful play of his fancy, the music of his songs, and, let us add, the nobility and purity of his tone had won to him a host of adherents, and if a young man cared for literature at all, he could not help being affected by the Tennysonian atmosphere in which he lived. If this is true generally of Tennyson's influence, it is to a more limited extent true of "The Princess." It is a poem which falls in easily with the glow of youth, with its dreams and its hopes, with the rush of youthful ideas and fancies: and not unfrequently the associations which it recalls in after years are those of the time when care was lightest and there was no strain in life—those of sunny afternoons in college gardens beneath the shade of "immemorial elms," or of comfortable easy chairs and window seats in college rooms, where with the facility of youth it was decided, perhaps too readily, that the hours of work were over and the time for ease and relaxation had come. But, happily, the subject allotted on this occasion saves the writers of this paper from the ungrateful task of criticising it in any wide sense of the word. He may preserve intact the associations which "The Princess" will always bring back to the mind, however many critics it may have, and confine himself to the consideration of it from one point of view only, viz: in its relation to the question of the higher education of women.

(1). Before the recent publication of Tennyson's Life, it might have been argued, with some plausibility, that the poem had really little to do with this question, or, at all events that it brought the question before us only from a rather satirical and almost derisive side. Thus, a writer in the *Edinburgh Review*, in October, 1855, before he comes to his special subject, the criticism of "Maud," speaks rather severely of "The Princess," and, we may add also, rather contemptuously of the higher education of women.

"The first condition of a great poem," he says, "is a widely and durably significant subject, whereas the subject of 'The Princess,' so far from being great in a poetical point of view, is partly even of transitory interest. This piece, though full of meanings of abiding value, is ostensibly a brilliant serio-comic *jeu d'esprit* upon the noise about 'women's rights' which even now ceases to make itself heard anywhere but in the refuge of exploded European absurdities beyond the

Atlantic . . . We fancy that we detect in the work itself, such signs of discontent as might naturally be felt by a great poet, who had begun his work half in jest, and without any intention of writing a long poem, and had suddenly found that his joke had attained unanticipated dimensions.' There can be no doubt that some such opinion was held, not merely by outside critics, but by some of Tennyson's close friends; witness the letter written by Fitzgerald and printed in the *Life*. But we now have it on record, that the poem was due to serious conviction in the poet's mind, as to the needs of his country. Tennyson saw two great social questions impending, "The housing and education of the poor man before making him our master, and the higher education of women." And although the fact of such a severe criticism from the "liberal" *Edinburgh*, is a very strong indication as to the opinion of very large sections of the community, both as to the poem and its subject, there were other writers who saw further and more clearly. The *Life*, as many of you will remember, quotes a single emphatic sentence written by the great mathematician, Sir W. R. Hamilton—"It deeply presses upon my reflection how much wiser a book is Tennyson's 'Princess,' than my *Quaternions*," and in an earlier number of the *Edinburgh*, (Oct., 1849), there is a much longer notice of the poem, which is now known to have been written by Aubrey De Vere, and to have been one of three which gave Tennyson great pleasure. In this there is ample recognition of the serious purpose of the poem. Its object is seen to be "the exaltation of womanhood." Though its tone is felt to be in part that of irony, yet that irony is "kindly," and by "insensible gradations, the serious and the tender first, then the pathetic and the profound, supervene upon the gamesome." The passage, better known perhaps, than any other in the poem, is quoted at length as showing how the Princess herself has restored to her "the substance of her early hope, now purified from presumption and ambition, and, learning as well as teaching through the sympathies" is assured, "that there had been a heart of truth in her aspiring creed."

"For woman is not undevelop't man
 But diverse : could we make her as the man,
 Sweet love were slain, whose dearest bond is this
 Not like to like, but like in difference :
 Yet in the long years liker must they grow ;
 The man be more of woman, she of man :
 He gain in sweetness and in moral height,
 Nor lose the wrestling thews that throw the world,
 She mental breadth, nor fail in childward care :
 More as the double-natured poet each :
 Till at the last she set herself to man,
 Like perfect music unto noble words."

And the general drift of the serious purpose is summed up as follows :—"The abundant grace and descriptive beauty which meet the superficial eye, constitute but the poem's external charm. Studying the poet's work with that attention, which the labour of a true poet should

always command, we soon discover that, while fantastic in its subject, it is eminently human in sentiment, and that the human gradually rises higher and higher into the moral. The poem plays with the arbitrary and theoretical; but it plays with them only to make them their own confutors. Such is the love which we learn from human life. Our follies are our most effectual instructors; and the strongest resolutions of manhood flourish best in the soil in which the extravagancies of youthful hopes have found a grave."

I regret very much that I have not been able to find in Leicester a copy of *Frazer's Magazine* for Sept., 1850, which contained a criticism by Charles Kingsley, another of the three which gave Tennyson himself much pleasure. It could not fail to be of deep interest, and one would expect to find in it a very generous estimate of the bearing of the poem on a question in which Kingsley was himself an early and strenuous worker, and a cause which he had always at heart. But what I have quoted will be sufficient to show that the earnest purpose we now know beyond dispute to have been the starting-point of the poem, was recognized by kindred spirits as soon as it was published, with scarcely a change in the wording. The concluding words of the passage just quoted from Aubrey de Vere, might well be taken to represent the present conviction of those who have done most to educate women and to find them work which shall give scope for their developed energies and abilities. The early mistakes which were the scorn of some writers have only led on to the sure victories of later days, and none can now doubt that for such victories Tennyson longed and worked.

(2). I shall, therefore, take it for granted that when Tennyson wrote "The Princess" in the forties, he intended in some way or other to help in the development and settlement of the second of the two great social questions which he saw impending—the higher education of women. In what ways, if any, has he succeeded? Can we, looking back over the fifty-one years which have passed since "The Princess" was published, trace any part of the advantages in the way of education, and what education leads to, now open to women, to his words, to his powers of observation and expression as contained in this poem?

(a). I think that to large classes of English people "The Princess" has been the first book that has ever taught them to think it possible that there might be any movement at all amongst women towards wider knowledge and greater freedom from constraint. The bonds of conventionality are as a rule tolerably straight for us all; wisely so, no doubt, in some respects; and those who can remember the general tone of English life for forty years, will see a very wide difference between what a girl may learn now, and what she might learn in 1850—a still greater difference between what she might do now, to her benefit on the whole, and what she might do then. "The Princess" has set many a mind, not only the minds of the young, but the minds of those old enough to have responsibility, parents and teachers and friends, thinking about this part of the subject. We all know the playful

protest against convention in the prologue which leads to the story:—

“There are thousands now
Such women, but convention beats them down ;
It is but bringing up ; no more than that,
You men have done it : how I hate you all !
Ah, were I something great ! I wish I were
Some mighty poetess, I would shame you then,
That love to keep us children ! O, I wish
That I were some great princess, I would build
Far off from men a college like a man’s,
And I would teach them all that men are taught ;
We are twice as quick !”

It is not meant to be taken too seriously, but it has shaken the usual confidence in conventional methods of instruction and conventional restraints. It has been seen by many a parent and guardian, that girls were not only as a rule “twice as quick” as boys, but more than twice as industrious ; and so the story of the college where those who are “twice as quick” as men might redress the balance of knowledge apart from man’s presence, has stirred many a misgiving as to what for long periods in the past, was thought quite good enough schooling for the girls of a family. Not of course that there were not thinkers and workers on this subject before “The Princess” was written. But a poem like this reaches minds which would not be attracted in ordinary ways. Its very fancifulness and remoteness from what makes up the common texture of daily life, save it from being voted dull. A lecture, say, from Miss Buss, one of the noblest of all the pioneers of the higher education of women, would reach a few, it is true, but many more would pass it by altogether, and yet “The Princess” might present the same problem to their minds and they might at last begin to think about it.

(b). Again “The Princess” has been all these years a constant reminder that in this movement towards greater knowledge and greater freedom of action consequent upon knowledge, there were certain to be extravagancies and mistakes. You all know that a great part of the poem is taken up by the working-out of the idea of the college, into which no male might enter on pain of death. For this ideal the betrothal promise is put on one side, and to this the Princess gives herself with all the force of a richly-endowed and vigorous nature. To maintain it, she will fight to the death. The love is half that of revolt from restraint, half that of aspiration after a noble ideal:—

“You likewise will do well,
Ladies, in entering here, to cast and fling
The tricks, which make us toys of men, that so
Some future time, if so indeed you will
You may with these self-styled our lords ally
Your fortunes, justlier balanced, scale with scale.”

One great purpose of the poem is to prove that, with much that is impossible to maintain, extravagant in conception, unworkable in practice, the ideal is noble, and can be retained. As Aubrey de Vere says, “the substance of the early hope is to be purified from

presumption," and bystanders are not to condemn the hope because of the faults which accompany the first efforts to attain it. It may be thought perhaps, that this lesson, that the extravagancies and mistakes of a movement in human thought and action, are not a condemnation of the movement itself, is too common-place to be worth such elaborate treatment. But we have only to recall the common ways of talking and writing about ladies' colleges, and other efforts to give a freer life to women, which have abounded in light literature, to see how prone we all are to fasten upon the errors of any movement we fear or dislike or doubt about, and to escape in the satirising of these from the duty of weighing its real purport. The Princess has at all events been a constant reminder of our duty in this respect.

(c). But to come to more important points. "The Princess" seems to me to have been for fifty years also a wholesome reminder, conveyed with the utmost delicacy, and yet with real force and power, that, whatever may be woman's thirst for knowledge and woman's longing for freedom, they cannot change the woman's nature. More pains are, perhaps, taken on this point of the poem than on any other. There is a touch of the consciousness of it in the passage I have just quoted, and later in the poem it is worked out at length. Pity, compassion, is the potent agent which changes the direction of the great efforts after knowledge and freedom, made without altering the end in view. The end is held to be right, it is only the way to it, the means to attain it, about which there has been any mistake. No doubt women, as a rule, are "twice as quick" as men, but this is true not merely on the intellectual side. They are "twice as quick" in the power of sympathy as well as in the power of acquiring knowledge; and when it comes to action, this must largely determine woman's life. It has been objected by some critics of "The Princess," that Tennyson failed to forecast the future of the movement which he favoured, because it is marriage that is in his thoughts almost exclusively; and that therefore he has no clear conception of the forms of devoted and willing service to which educated women would give themselves when once their thirst for knowledge and freedom had been satisfied. I cannot think that this is a just criticism. It is true that in the Princess of the story, pity led to love—the love of husband and wife. The cast of the story demanded it; without it, Ida herself would have been untrue, and the impossibility of the death penalty for intrusive man could not have been brought out; but there is not a word to show that in others the awakening of the woman's sympathies, along with the gratification of the thirst for knowledge, might not take other directions; and I fancy that Tennyson would have maintained in answer to the criticism, that the pure devotion of the skilled teacher, or the thorough nurse, or the woman who in any other way gave herself entirely to the good of her fellows, is only akin to the pure devotion of the perfect wife.

(d). And this brings me to the last and deepest lesson taught by the Princess, in regard to the higher education of women, viz:—that

anything like an absolute separation between the two is impossible—I mean that, however highly you educate woman, you cannot educate her only for herself, any more than you can educate man only for himself.

We all of us remember the picture in *Punch* of the young man in a concert-room who rises with the intention of giving his chair to a lady, but before he does so he puts the question, “Madam, may I ask if you are a believer in woman’s rights?” and when he receives the decided answer “Most certainly, sir, I am,”—“in that case,” he says, “I shall retain my chair.” Perhaps some of us can also remember the tone and temper which might have led to such a rebuke. The beautiful passage in which the final betrothal of Ida is described, a passage which I have already quoted, and many another graceful touch in the poem, have helped to keep alive, amongst educated people, the courtesies which are needful both for man and woman, not as a mark of woman’s subjection and restraint, but as a simple duty because man is man and woman is woman. So long as this is kept in view there is ample scope for woman as for man in the realm of knowledge and in the realm of action, and some at least of those who achieve most in either, will look back gratefully to “The Princess” as one of those “wildest dreams,” which “are but the preludes of the truth.”

I will conclude with one more extract from Mr. Aubrey de Vere’s article :—

“It has been remarked, among the distinguishing attributes of high poetry, that such contains ever, whether intentionally or not, a number of subordinate meanings, beside that which lies on the surface. Indeed, we know not how it should be otherwise : the stream will make mention of its bed ; the river will report of those shores which, sweeping through many regions and climes, it has washed ; and those currents of thought, whose sources lie afar off, must needs be enriched with a various and precious store. The results of large generalizations must ever, though undesignedly, be symbolical—a fact, which in itself, proves how needless is the labour of a poet, who, with a didactic purpose, devises a formal allegory, and models his work on such a framework. Suggestiveness we should class among the chief characteristics of Tennyson’s poetry. Among the lesser meanings of his most recent work, that vindication of the natural ties against the arbitrary and theoretical, is not the least significant. Passages in it have a remarkable reference to children. They sound like a perpetual child-protest against Ida’s Amazonian philosophy, which, if realised, would cast the whole of the child-like element out of the female character, and at the same time extirpate from the soul of man those feminine qualities which the masculine nature, if complete, must include. Human society can only be a perfect thing when it is the matured exponent of man’s nature fully developed in it ; and such development can only take place when, with due distinction and division, the contrasted parts of it, whether brought out by diversity of sex, age, rank, power or other circumstances, are allowed an independent and separate expansion !”

THE POLITICAL IDEAS OF TENNYSON AND CARLYLE
COMPARED.

By Rev. W. WHITAKER, B.A. (Read before Section "A.")

I do not wish to suggest, by the title of this paper, that Tennyson can for a moment be compared with Carlyle for originality of view, for depth of insight, or for success in anticipating the development of modern ideas. And, again, the comparison is a little awkward because Carlyle directly addressed himself to the treatment of social questions, whereas Tennyson's attitude has to be learned almost always from scattered allusions and remarks by the way. But while Carlyle was the far more notable of the two as a political philosopher, and while Tennyson always wrote as a poet and not in the first place as a teacher, the comparison is inevitable; probably we have all made the comparison for ourselves, and reasons for making it will appear as we proceed.

It may seem a far cry from Tennyson to Rousseau, but the best teachers of our time will have us look back to Rousseauism and the State of Nature and the Social Contrast philosophy for an explanation of later appearances. In Tennyson's time, it is true, the echoes of the great catastrophe of France, at the end of the last century, had died away; but the movement of thought which had produced the Revolution had really gone further than men knew. It was not merely a new outburst of the passion for Freedom; it was the rise and growth of a new insight into the nature of human society. In England its influence flowed along very divergent channels and manifested itself in ways that were strikingly at variance in every other respect than this of a common source. In particular, both the social philosophy of Wordsworth and the utilitarian theories of Bentham have to be regarded as part of the great movement of thought which aimed at a return to nature. "Back to nature" had been the cry of Rousseau. In very different ways it was the cry also of Wordsworth's ardent faith in social justice, and of Bentham's attempt to simplify and rationalize political phenomena. Our present interest is more immediately with Wordsworth, for in more senses than one, Tennyson received the laurel from the brow of him who uttered nothing base. About Wordsworth, then, this one word has to be said, that he handed on to Tennyson a general conception of the nature of society and a noble enthusiasm for political freedom. There is, indeed, a stupid criticism on Wordsworth which we are only now beginning to unlearn, that Wordsworth exchanged his early enthusiasm for freedom, for an attitude of unsympathetic resistance to all reform movements. It was an excusable mistake, perhaps, but it evinces once more the lack of discrimination which characterises all

partisan judgments. Wordsworth's writings, carefully considered, show that he retained throughout his whole work the same fundamental social philosophy which in his earlier years had given so eager a welcome to the new movements across the water. But he had never shown favour to the atomistic or individualist theories of society which characterised the Benthamites and which, in England, appeared to be the natural ally of the new reform movements, and the new passion for freedom of Whiggism and Philosophical Radicalism. Wordsworth was a classical scholar; the new English school of philosophy cared nothing for the classics, and they mark the endeavour to make an absolutely new start, to get a first look, a *prima facie* view of society and of political fact. Herein lay a fruitful difference between the poet who came to these subjects with a whole world of prepossessions in the shape of Platonic and other philosophies, and his empirical and utilitarian contemporaries. In his old age, Wordsworth said, "He could never have been a Whig, but he might possibly have been a Chartist." Wordsworth never *was* a Whig or a modern franchise-reforming Liberal, and therefore should not be blamed as if he had turned his coat. Neither was he naturally a Tory. He was a child of that far-descended elaboration of classical political theory in which the great modern names had been Rousseau, Locke and Hobbes, and which looked back in a great measure to Plato himself.

Out of this long story comes at last the name of Tennyson. If Wordsworth could never have been a Whig, certainly Tennyson could never have been a Chartist. He was a better Whig than Wordsworth, and in the actual practice of politics he showed much sympathy towards reform movement. But the inevitable bias of classical study is revealed throughout Tennyson's writing, showing him fundamentally at one with Wordsworth in his view of society as a real whole, a working organism, which exists as in a very real sense an end in itself and not merely for the freedom of its separate individuals, and not as having come together experimentally or as resting its reality upon empirical facts. Again and again we feel that he has often, like the companions on the lawn, "threaded some Socratic dream"; and in the poem "Love thou thy land" there is the distinct Platonic analogy drawn between the organic working of the animal body and the working of change in the history of the body politic. This is wrought by "Life that working strongly binds," and all legislation is to be—

"Set in all lights by many minds
To close the interests of all.

For Nature also, cold and warm,
And moist and dry, devising long,
Thro' many agents making strong,
Matures the individual form.

So let the change which comes be free
To ingroove itself with that which flies,
And work, a joint of state, that plies
Its office moved by sympathy."

This is in the spirit of classical speculation, and to that extent is in close agreement with the teaching of Wordsworth. The Solitary in the "Excursion" did not hail the French Revolution merely as a deliverance from ancient oppressions, but much more because—

"From the wreck
A golden palace rose, or seemed to rise
The appointed seat of equitable law
And mild paternal sway."*

And while he sings in the Ecclesiastical Sonnets,

"How, like a Roman, Sidney bowed his head
And Russel's milder blood the scaffold wet,"

he remembers that Freedom is not all, and that the social bond is a reality; civil freedom he calls a "humbler franchise," and so he warns us—

"Nor yet
(Grave this within thy heart) if spiritual things
Be lost through apathy, or scorn, or fear,
Shalt thou thy humbler franchises support
However hardly won or justly dear?"

And so with Tennyson, Freedom was always something "within the bounds of law." But having spoken of Tennyson's agreement with Wordsworth, let us try to mark his divergence. Tennyson, we say, was a better Whig than Wordsworth—there is no need to point out his consistent admiration of Freedom, his belief in popular institutions and constitutional government, and slowly widening reform.

He loved Freedom, and loved it more boldly and with a less timid faith than Wordsworth, and this appearance of boldness is due to the great estimation in which he held individual rights, English freedom of speech, English equality before the law, the sturdy and vigorous independence which is a good in itself quite apart from those considerations of public polity which were always present to Wordsworth. It has been said, and it is generally true, that Wordsworth believed in political rather than in civil freedom. Tennyson believed in civil freedom quite as much as in political. He loved our "crowned republic" (and he *meant* both these words) set up in—

"The land where girt with friends or foes,
A man may speak the thing he will."
"It was our ancient privilege, my Lords,
To fling what'er we felt, not fearing, into words."

He delighted to think that—

"From our first Charles by force we wrung our claims,
Prick'd by the Papal spur, we reared,
We flung the burthen of the second James."

Individual freedom, personal freedom, the personal resistance of English freemen to encroachments of King or Pope, or the power of the

* A firm believer in the ideal of liberty, he nevertheless anticipated Carlyle and the Social Reformers, and pointing to the wretched labouring population of his day, he asked, "What has the country done for these? What liberty of mind is here?"

majority; in all this we catch the distinctive spirit of Tennyson as different from that of Wordsworth. He says he would leave the country to its ruin—

“Should banded unions persecute
Opinion, and induce a time
When single thought is civil crime
And individual freedom mute.”

Again, neither Wordsworth nor Tennyson cared much for *social* equality, but Tennyson was compelled by the movement of the times to care for it more than Wordsworth. And, upon the whole, while they were both strong Constitutionalists, Tennyson saw much more clearly than Wordsworth the need of change—and incessant change—in political arrangements, as we see in the poem, “Love thou thy land,” which might be entitled Tennyson’s political *Credo*.

It was necessary thus to draw out the comparison between Wordsworth and Tennyson in order to introduce the relation of Tennyson to Carlyle, for the whole subject depends on particular and detailed comparisons and contrasts. In one sense, while we can trace the descent of Tennyson’s views, Carlyle starts upon our gaze suddenly and without announcement, just as he suddenly loomed upon the literary horizon of the century, a *monstrum horrendum*, without assignable ancestors and without intelligible functions. And yet, as we have noted, Carlyle’s insight into the problems of the century as social rather than political, had been anticipated by Wordsworth. Carlyle owed nothing in all probability to ancient political philosophy, and to this extent he is different from Wordsworth and Tennyson alike. But as a critical force his efforts went in the same direction as Wordsworth’s, and the things he fought against were some of the prominent ideas in Tennyson’s political thinking. Carlyle was no Constitutionalist. The British Constitution either was or might easily become one of the shams of an age of Cant. And because Carlyle did not, like Wordsworth, draw his weapons from established modes of thought, because he started out with as frank a determination as that of the Benthamites to see the world at first hand, his criticism was more damaging, for its edge could not be turned as in Wordsworth’s case, by the taunt that he had turned Tory; he was more Radical than the Radicals. Carlyle’s, we say, was a new, first-hand contact with the facts, and he had no *impedimenta* either in the shape of English Constitutionalism or in “Socratic dreams.” In politics, as in all else, the thing dear to Carlyle was the mere brute fact.* If Tennyson loved ideals, Carlyle sought for *reals*. Now the real things in English politics for Carlyle were not the British Constitution and the need of a wider franchise, and the abolition of social bonds and more complete *laissez faire*, but rather and on the contrary, the need of other and finer ties than the cash nexus; the recognition by the aristocracy of their natural functions in the state, the

* He sometimes made shocking mistakes as to facts, but this is a true description of his method.

recognition of worth and superiority in their natural leaders by the masses of the people, and above all, instead of the reduction of government to a vanishing point, a revival of true government—which was at the same time to recognise the freedom of the governed—by some methods as yet undiscovered.

The appearance, side by side, of these two strongly marked positions, is sufficient of itself to point a new departure in our common political thinking. Tennyson, perhaps, made no contribution to our ideas in politics any more than in religion, but in one as in the other, he voiced the deepest convictions of those who were just a little in advance of the mass of educated thought. The juxtaposition of this teaching with the really original work of Carlyle relieved our political thought of the monotony of being a see-saw between too fast and too slow. Men were to be no longer divided between "Raw Haste, half-sister to Delay," and a superstitious love of the Past "clinging to some ancient saw." A noble lover of Freedom had concentrated the practical wisdom and experience of English history into melodious maxims such as those in "Love thou thy land," and the summit of truth seemed to have been reached in a teaching which abhorred the "falsehood of extremes," and the blind hysterics of the Celt." Then came the apparition of Carlyle and the harmony was at an end, for new problems emerged. While the singer was rejoicing at the age—long development of Constitutional Government, of "Freedom in her regal seat of England" slowly broadening down "from precedent to precedent," another process had gone forward almost unobserved although aided by our Whigs, which we may roughly describe in the words of Maine's law as the movement of society from Status to Contract, the growth of "economic freedom," (in the sense of the text books). Neither Carlyle nor Tennyson had much to say that could help us immediately in the new problems, but Carlyle realised the problem and made it vivid.

I am afraid these generalizations do not carry us far, and I will end with a short tabulation of a few details:—

1.—Tennyson always cared more for general principles—such as those of Constitutionalism—than Carlyle, who always appeared to be on the point of saying, "Whate'er is best administered is best." Tennyson also has professions in this direction; one of his maxims is "Nor deal in watch-words overmuch," and again, in "The Princess," "Let this proud watch-word rest, of equal." But it remains true that, of the two teachers, it was Carlyle who thought most of getting the right men into the right offices of government, and letting them have free scope for their powers. It is known that Carlyle leaned to Disraeli rather than to Gladstone, and this was not because he was under any illusions about the spirit and methods of that statesman's rule, but because he admired skill and grip and crude strength, and thought that the other great protagonist was weakened by a too scrupulous and ineffective conscience. As to Tennyson, on this matter, there are passages which might be quoted on the other side, "The strong still

man," &c., but I think that his Constitutionalism is the far more general tendency in his writings.

2.—All this comes out curiously in the attitude of the two men towards the apparent evils of democracy. They both took turns at all-round denunciation. Tennyson talked about the "herd whom every sophister can lime" long before the second "Lockesly Hall," but this did not form so steady an element in his thought as in Carlyle's, for his Constitutional faith made him wait for the gradual re-adjustment of the new conditions. They both feared risings and revolutions such as no one thinks of now. Was Carlyle wrong in his greater fear? Perhaps we may say that the Gospel which he preached was an important means of preventing the evil. Society has been "saved," for the present, by the revival of those social relationships which with Carlyle had the first place.

3.—Tennyson said, "The woman's cause is man's." To Carlyle, the "political rights of women" could have had little meaning; "Against nature" was the objection to such claim. Yes! replied Tennyson, in effect, and so is every true social ideal against nature. To Carlyle such "ideals" meant nothing.

4.—We may sum up the chief divergences of the two by saying that Carlyle had discovered the nature of modern political problems, to be "political" in the ancient sense, *i.e.*, social, and in this he went beyond Tennyson. Tennyson was the exponent of his own time, Carlyle was the exponent neither of his own time nor of the future, but he recognised the new principle of Association as the necessary complement of Freedom. He wished to extend the functions of Government to the control of industry. Tennyson had no word on this, yet curiously enough, and this illustrates what has been said, it was he and not Carlyle who sung of the Golden Age in many poems when all men's good is to be each man's rule, when wealth shall "no longer rest in mounded heaps"; when "England, France, all man to be, will make one people ere man's race be run." Carlyle, like Ruskin and the young Englanders, was ever harking back to impossible revivals of feudalism. Tennyson had none of these ideas. He did better—he showed the actual progress and regress of things in his contrast of the two Northern farmers, and this was depressing enough; yet he also looked forward to the time beyond the evils:

"Then comes the statelier Eden back to men,
Then springs the crowning race of humankind."

ON THE GENERA *DEPRESSARIA* AND *GELECHIA*.

By REV. CANON CRUTTWELL, M.A. (Read before Section "F.")

IN the remarks I am about to make on some species of the genera *Depressaria* and *Gelechia*, I must premise that I am referring to the latter genus in its older and wider sense, as including some 109 British species now distributed among 21 genera, viz., *Gelechia*, *Brachmia*, *Bryotropha*, *Lita*, *Recurvaria*, *Poecilia*, *Argyritis*, *Nannodia*, *Apodia*, *Sitotroga*, *Ptochenusa*, *Ergatis*, *Doryphora*, *Monochroa*, *Lamprotes*, *Anacampsis*, *Acanthophila*, *Tachyptilia*, *Brachycrossata*, *Ceratophora*, and *Cladodes*.

Whether the characteristics on which these numerous sub-divisions are founded are truly generic, I must leave to the consideration of more highly qualified students than myself. Stainton, writing in 1867, says "We do not find any such definite differences as to enable us to divide the genus." At that time there were 231 described European species, and at least as many more exotics. During the last 30 years we may be sure that several fresh species have been added to the list, so that we shall probably be within the mark if we suppose the original genus *Gelechia* to contain at least 500 species, an unwieldly assemblage, irresistibly enticing to the ambitious classifier.

The genus *Depressaria*, which, though placed by Meyrick owing to differences in the venation of the wings in a separate family, is generally considered very closely allied to *Gelechia*, has on the contrary, resisted with success all tendency to dismemberment. Though containing between 80 and 90 species, the characters of the genus are so well preserved that only one or two species permit any doubt as to their location. This fact is of great advantage to the student of the group, and when combined with the comparatively large size of the imago, and the facility of finding and rearing the larva, it is not surprising that this genus is one of the most attractive among the microlepidoptera.

The salient features by which the two genera can be recognised are as follows:—*Depressaria* is characterised by the long, recurved labial palpi, of which the second joint is furnished beneath with a dense brush, divided longitudinally in the middle, and also by the depressed abdomen, fringed at the sides with scales, from which it takes its name. In one species only of the genus is the brush absent, being exchanged for thick scales: in two others it is prolonged into a tuft. In all the rest it forms a constant and obvious characteristic mark.

In the case of *Gelechia*, the most nearly universal characters are (1) long, recurved labial palpi, with terminal joint thin, smooth and pointed,

the second slightly broader beneath, sometimes rough, sometimes smooth, but never brushlike, nor tufted (2) The very peculiar apical emargination of the posterior wings in all but a few of the larger species, which character however extends to several allied genera that differ in the structure of the palpi. This emargination is, so far as I know, quite peculiar to this group among the whole class: no other insect known to me possessing it.

SUBDIVISIONS OF THE GENERA.

Stainton confesses that the species do not admit of tabulation. But he distinguishes two groups in *Depressaria* which are easily parted off. The first 25 species have a pale patch at the base bordered by a more or less indistinct streak from the inner margin, which loses itself when half across the wing. The last 14 lack this character, but have the extreme base of the inner margin whitish, edged by an oblique dark line from the base to the inner margin. This marking is most conspicuous when the insect is at rest.

In the case of *Gelechia* there are three small groups which stand out from the rest. First, those mostly large species which lack the emargination of the hind wings, now placed in the genera *Recurvaria*, *Tachyptilia*, *Ceratophora*. Second, those whose larvæ feed on various plants of the order *Caryophyllaceæ*, now mostly placed in the genus *Lita*, a very difficult but interesting group, monographed by Mr. Tutt in the XXth vol. of the "Entomologist." Third, those whose larvæ feed on leguminous plants, divided between the restricted genus *Gelechia* and *Anacampsis*, containing two sub-groups, intimately related between themselves, of which the *Anacampsis* group is particularly interesting from its rich colouring. The species of each of these groups are to be found together: the genus *Lita* in particular being highly social, and seven or eight species not unfrequently haunting the same strip of coast.

HABITS OF THE PERFECT INSECTS.

These are by no means so similar as the similarity of structure would seem to imply.

The British species of *Depressaria* without exception emerge in the later summer, from July to August, and the great majority hybernate, pairing in the spring; and may be collected in the larva state in May and June. The perfect insects are as a rule extremely retired, rarely leaving their concealment until after hybernation, and even then being seldom caught on the wing. The only species I remember to have captured at large are *Costosa* and *Heracleana* on heaths and rough ground in August, *Applanella* in gardens and hedges in April, *Alsbroemeriana* in fields and outhouses in April and May, and *Arenella* less commonly in similar places. All the rest must be searched for, but many are gregarious, and by careful search I believe a considerable number may be discovered in most ordinarily favourable localities. The most productive

spots I have found to be (1) thatch, haystacks, and faggot heaps in October and November. At Denton I have beat 7 species out of one barn: some of them good sorts. (2) Embankments of turf near heaths and woods, the roots of tangled bushes growing in isolated patches, and above all overhanging mud-cliffs or sand dunes close by the sea. More *Depressariæ* can be procured in a day by any of these methods in August, September or October, than one would collect by ordinary beating in a season. Rotten wood is also a favourite resort of some species. I once found about 50 specimens of *D. badiella* in a decayed stump; and though I have seen hundreds of this species I never yet saw it fly voluntarily. When disturbed it invariably falls as if dead, and then shuffles either on its legs, or more frequently on its back, into some place of shelter. Many species frequent houses. *Applanella* is well known for its partiality to warm rooms, an unusual habit in this genus, which as a rule is pre-eminently a temperate one. From its frequency in seeking shelter in coats, rugs and carriages, it is often erroneously mistaken for a clothes-moth, but this is a libel on its character, for the larva feeds in the flowers of various umbelliferous plants, never on woollen material. The handsome species *D. heracleana*, which sometimes expands a full inch across the wings, is attracted by light, and I have several times taken it in my study at Denton. Other species come to sugar, especially *Costosa*, *Yeatiana*, and *Applanella*: but I have never captured any of the rarer species in this way.

The best plan is to procure the larvæ, which are fairly conspicuous and in some cases very beautiful. Their muscular power and extraordinary activity are among the marvels of insect life. That of *D. umbellana*, which is common in the young shoots of gorse is pre-eminent in these respects. When sunning itself at the mouth of its silken refuge if it be suddenly touched by the hand, it either retreats with an instantaneous backward wriggle into the spiny recesses of its inhospitable food-plant, requiring a knife to extract it, or else drops to the ground with such rapidity as to defy the closest observation. The above is a good instance of a species, which exists in countless swarms on many an East Anglian heath, but which I never saw in the perfect state until I had learnt how to unearth it from its shelter, and then it was common enough.

This genus is little subject to variation, and when a species does vary (e.g. *Liturella*) the variation is fairly constant. I have a few varieties of *Badiella* and *Umbellana*, which are not without interest, and possibly if large series were arranged on the principal of geographical distribution material might be obtained for a fuller description of the limits of variability than is now within reach.

HABITS OF *GELECHIA*.

These are all purely summer insects, one species only being known to hibernate: a few emerge in May and are double-brooded: a much larger

number continue out during a considerable time ; but the majority have but one brood, and that of no long continuance. This complete contrast to the allied genus *Depressaria* is very striking.

In trying to sketch comprehensively the general habits of so vast a genus, it is obvious that only the barest outline can be given. The larvæ, for example, exhibit a considerable range of habit as well as of food-plant. As I have hardly any personal knowledge of them I will content myself with quoting the words of Stainton in the Xth vol. of his "Tineina." "The greater number of larvæ feed in the buds and shoots of plants or between united leaves—but two species at least *Rufescens* and *Lutatella* feed in grass leaves rolled into a tubular form, and probably there are others with a similar habit: many mine in the leaves of plants, *e.g.*, *Acuminatella*, *Næviferella*, &c.: others feed in the seeds, as *Malvella*, *Bifractella*, *Inopella*, &c., or in the stems, as *Cauligenella*. Some few seem to have habits altogether aberrant, such as the moniliform larva of *Arundinetella*, which makes slender galleries in the leaves of *Carex riparia*: and the still more singular larva of *Subocullea* which forms a case out of the dry flowers of the marjoram (*Origanum vulgare*), and which thus simulates the habits of the genus *Coleophora*." "Most of the larvæ are to be found in the spring or early summer; the seed feeders appearing later in the season. Of a few species the young larvæ live through the winter (*e.g.* *G. rufescens*), but I believe the greater number pass the winter in the egg or pupa state."

The habits of the imagines are much more active and less retired than those of *Depressaria*. Yet though endowed with great quickness of motion when necessary, these insects do not often shew themselves on the wing. It is astonishing among the swarms of micro-lepidoptera to be met with on warm still evenings to observe how few belong to this large and pre-eminently temperate genus. Practically, they have to be searched for like the *Depressariæ*, but in quite a different way. Whereas the net is hardly required for the former, for the latter it is indispensable, and in my opinion requires more skilful handling than in the case of any other genus of our moths.

Gelechiæ hide in all sorts of places; but by preference they choose the trunks of trees with rough bark, wooden palings without interstices, and the matted stems and roots of low plants and grasses. Of course these different habitats are the resort of different groups of species. But I have always found that the sheltered side of those wooden fences so common in the South of England is productive of numerous species; while on the sea coast large numbers may be obtained by beating the herbage overhanging the cliff: while others may be dislodged by the fumes of tobacco smoke. So far as I know they will not come to sugar.

The one essential towards capturing them is promptitude. No insects are more sudden in their movements; and though they rarely or never fly far, their flight is so rapid as to task the observer's power, both of sight and hand, to the utmost.

Moreover they are as active with their legs as with their wings, and are specially given to burrowing with their pointed heads into the tangled stems at the roots of plants, so as often to defy extraction without being crushed in the process.

Some species have the habit of simulating death when beaten out, and after lying about five or six seconds, they fly off with a jerking side-long movement, just on the level of the grass, making capture no easy matter.

I sometimes think these insects have developed more intelligence in self-preservation than most of our moths. There is a brightness and alertness about their general expression which irresistibly suggests the notion that they know what you are about, and mean to dispute conclusions with you. Though as a rule dull-coloured and far from beautiful, their vigour and activity has always drawn me to the species of this genus: and I think I have had more pleasurable excitement in collecting them than those of any other.

My work among Gelechiæ has been nearly confined to the Eastern Counties, where over 50 species have fallen to my net. No doubt they are equally well distributed over other parts of our Isles: and Scotland in particular contains some very choice forms. Next to the sea-coast I have found sandy heaths most productive. The best time for finding Gelechia on the wing in such situations is on still evenings about half an hour before to after sunset, when many species will rise of their own accord in little jerky flights of a few feet or yards, continuing to do this, if watched in silence: but if too hastily pursued, invariably keeping quiet, and baffling the most eager search. In this way I have taken some very beautiful species, as *Pictella*, *Anthyllidella*, *Coronillella*, *Albipalpella* and *Tæniolella*. A fair number may be obtained by sweeping in late afternoon or early evening: and a few fly at sunset round hedges near woods.

I think the best way to get the smaller species is by briskly tapping fences or tree-trunks on the sheltered side, and holding the net near the object, so as to secure the moth before it gets under way. Thatched roofs are also a favourite resort, even in the hottest weather: though I think only of a few species.

A very few may be beaten out of trees or taken flying round them, e.g., *Dodecella* round fir, *Tricolorella* round hornbeam, and *Proximella* round birch. But I do not recommend this method. The vast majority keep close to the ground and require minute searching for.

I may remark that since the edition of South's List which I possess (that of 1884), was published, no less than four new species have been discovered in East Anglia, three of which I have myself taken. They are all from the coast, frequenting salt-marshes. *Suedella*, taken by Mr. Barrett at Lynn, *Obscurella*, by myself at Aldeburgh, *Figulella*, also at Aldeburgh, and *Salicorniæ*, which I took in 1893 at Freshwater, and again last summer at Southwold. This is a striking indication of the results that might be obtained by careful workers in this genus. I feel

quite certain that there are species yet to be unearthed on our coasts, especially the mud flats and salt marshes. These uninviting tracts are tenanted by few insects: but the dingier species of *Gelechia* seem specially attached to them: and I hope some of our younger collectors, who have time and energy at their disposal, which we seniors no longer possess, will succeed in materially enlarging our already ample record of this most interesting group.

ON THE EVOLUTION OF THE HIND WING IN
LEPIDOPTERA.

By W. J. KAYE, F.E.S. (Read before Section "F.")

WHAT I have chosen for my subject this evening may appear perhaps to some present, as rather dry. But I hope that to the rest I shall impart some acceptable information, and some food for thought, which I have been so interested in since the idea seized me.

Some of you will probably say to yourselves, why has he fixed on the hind wing? why not the fore wing? Well, this is a very natural question, and I am perhaps out of my course for not taking the fore wing. But it has struck me that the hind wings are those which have and are undergoing the greatest change.

Perhaps at this point it would be well to give the definition of evolution, which Huxley has formulated very concisely. It is—"evolution or development is at present employed in biology as a general name for the history of the steps by which any living being has acquired the morphological and the physiological characters which distinguish it." There is no mention here whether the steps are upward or downward or either. The chief line of thought which I shall bring before you to-night, will be of the latter or downward path, which the hind wing appears to be on in many instances. Unfortunately, one group, the *Sphingidae*, that I intended to illustrate my argument with, is only represented by one fossil, and that a very doubtful one, seeing that it is placed by some among the *Vanessidae*! The knowledge generally to be gained from the fossil remains of the Lepidoptera, I may state at once, is very limited. As might readily be supposed, fossils of such delicate creatures as butterflies are excessively rare. They are only found in the recent beds of the tertiary deposits.

To give some idea of the numerically few butterfly fossils, let me quote Scudder. He says: Over fifteen thousand insects from one small ancient lake of Florissant, high up in the Colorado Parks, have passed through my hands, yet I have seen from these but seven butterflies. Still we are glad to have any, and strange though it sounds, when we do find them they are generally splendidly preserved, so that the neurulation, the colour, and sometimes the shape of the scales can be discerned readily. Nine well-authenticated fossil butterflies are now known, which are all from the European tertiary beds. It is thus pretty certain, though of course not absolutely, that the advent of butterflies was in tertiary times, as there is no trace of lepidopterous remains in the older strata. Of the nine species, three are *Nymphalidae*—*Oreades*, *Meadow*

Brown and Thistle butterflies. The highest group of butterflies, four *Papilionide*—three *Danaïd*s and 4th to Ally of Swallow-tail, and two *Urbicole*—*Astayads* (tawny June Skippers), *Hesperids* (early spring); thus but one family is missing in a fossil state—*Rurales polymatus*, &c., which is not to be surprised at, seeing the delicate nature of the species. A doubtful instance of their larvæ preserved in amber, is to hand from Aix. Together with the butterflies; the plants, which we may suppose formed their pabula have been found, except the case of crucifers, the absence of which is not remarkable when we remember the nature of the plants. This is of course assuming that the food plants were of the same kind as they now are. Taking into account the co-existence of known food-plants with the insects, this seems not unreasonable, although as I have already mentioned, the fossil remains of hawk-moths do not help us much to form any opinion as to what sort of change they have been undergoing. But an examination of some of the existing species reveals a striking emargination in the anal angle of the hind wing. In the American species of the genus *Smerinthus* among the allied species to our *Ocellatus* we find most interesting forms. *S. ophthalmicus* shows a more perfect margin than does *S. geminatus*, and *S. geminatus* in turn is less scalloped than *Ecceaccatus*. Now as these species, we may take it, from their great similarity are descended from our common form, I am inclined to place the last more scalloped *Ecceaccatus* as the most recently developed species. Assuming this idea as correct, what is the outcome of the tendency to scalloped margin—a diminution in size. The reason I think is not difficult to trace. Firstly, the perfect margin—the membrane between the termination of the nervines recedes—the angles left by this process become atrophied, and the insect assumes smaller wing proportions. This process if true of the hind wing is no doubt true of the fore wing, in either a more or less degree, probably, as I hope to show later, of the latter. But to take one or two more hawk moths to illustrate what I have said, *Unzela japis* forms a striking example. *Enyo lugubris* is another good illustration. In both these species the scalloping to the inner margin of the hind wings is very well shown, and strikes one that such a form is unlikely to be of ancestral origin. I do not pretend that those species indicated are the sole examples. There are many others, *Caerocampa lineata*, *Angonia busiris*, and *Ambulyx maculifera*, all show this seeming contraction of wing membrane in the hind margin of the secondaries.

But to look at some other group. Let us take the swallow-tails of the tribe *Papilionida*, among the most interesting of all to examine in connection with the hind wing. In this tribe *Papilionida*, we have species with immensely long tails, shorter tails, indications of tails, and no trace of a tail at all. Surely here is something remarkable, that all these forms are closely related, we take it for granted seeing that in the characters by which we classify them, they closely correspond. Shape and marking of the egg, larva, neuration and other characters of the

perfect insect. The point I wish to raise is, whether tailed Papilios (shall we call them) are becoming tailless, or *vice versa*, tailless Papilios becoming tailed. Briefly it is my opinion that both are taking place, and that tailless to tailed is antecedent to the former, and that both conjointly are tending to diminish the size of the wing. Mr. Dixey in his paper on Mimitic Patterns alludes to (among others) *Papilio Zacyanthus* and *Euterpe tereas*. He there says (alluding to divergent members of an inedible group) that the *Pap. Zacyanthus* is undoubtedly the model and the pierine *Euterpe tereas* the mimicker. This may be so, but I cannot help thinking that the Papilio is undergoing changes, and that the hind wing is just in such a position as to warrant such an assumption, namely, the scalloped margin, and this would be highly beneficial to the *Euterpe* as its size is considerably less than the Papilio.

There is another small group of Papilios found in central and the northern half of South America, that I should like to remark on in reference to the size of tail. I refer to the *Macrosilaus*, *Archesilaus*, *Epidaus* group. It is highly probable from their great similarity that they are from one common stirps. But which is the most modified is a question not easily answered. But I think it is highly probable that the hind wing is now assuming narrower proportions in some than in others, as is very well shown in *Epidaus* and *Neosilaus*. The length of the tail is certainly longer in the former than in the latter, but the species is proportionately larger itself. It may be wondered and questioned why should a diminution in size be taking place, and have we any reason apart from the testimony of individuals to suppose that such a state of things could be true.

At the present day if we compare our collection with one made a hundred years ago, we are irresistibly struck with the diminutive size of *some* of our insects compared with the century old specimens. Certainly the most noteworthy case in our own county, is that of *Macrogaster arundinis*, which is now not more than half the size of when it was first discovered. The reason generally assigned being that the fens, the habitat of the insect, are gradually drying up, and that the reeds have become stunted, and following this the larva has had to follow the same course. This I consider an extreme case, for here the insect has assumed smaller proportions generally in a space of time quite short for evolution to work. But even here I think it may be assumed very fairly, that the angle of the hind wing was the first to change, as this part the insect could afford to lose easiest, being of very thin membrane, containing very little nutriment, and comparatively speaking, little use for flight. Existing specimens show this emargination very distinctly, and doubtless the wings in another century will have assumed still smaller dimensions. I think that in the case of this species there have been and are two agents at work to bring about change, firstly, as stated, the stunted growth of the reeds which would no doubt affect the size of the abdomen, and also the sedentary habit of the moth. We know in this

county that the insect flies but little, and from the numbers captured, only when the atmospheric conditions are favourable. And we also know that senses and limbs that are allowed to fall into disuse become useless and in the latter atrophied. Now I think there is here some foundation in assuming that, had the fens existed as they were originally, this moth would have been more likely in course of time, to possess smaller and smaller wing area until they became useless for flight. As it is there appears to me to be a counteracting agent at work, namely, this gradual stunting in the growth of the reeds, whereby the abdomen of the insect gets smaller in size, and therefore the tendency to use the wings is greater than what it might have been if its former condition had prevailed, as the weight of the body to carry is less. My listeners may not *at once* fall in with my remarks, nor (may I state) do I expect them to straight away, but here is a most interesting case and worthy of some thought whichever way one may lean towards. I should now like to go one step further with the hind wing, and will ask you to look at the genus *Lobophora*, of which we have but five species in Britain, viz.: *Sexalisata*, *Halterata*, *Lobulata*, *Polycommata*, and *Viretata*. All the species exhibit remarkably small hind wings, *Lobulata* particularly so. But in addition to this a small lobe is present in *Sexalisata* and *Hexapterata*, and there is an indication in *Viretata* also. Now what the use of this lobe is going to be, or has been, is to me very interesting. We cannot conceive of such an appendage as being useless, and therefore are constrained to imagine some function which it may be performing. At this point I should just like to mention that in some few exotic species, a doubling, so to speak, of the hind wing is to be found. *Leptocircus decius* and *curius* exhibit in their remarkably extended tails one membrane over the other, although in this case the two are of nearly equal length. Now the question to be answered is, has this lobe in the genus *Lobophora* been an after growth from the thorax, or has it been a bilamination (if I may be allowed to use such a word) of the hind wings proper themselves? Looking at the Indian *Leptocircus* certainly suggest this latter, from the nearly equal length and of the membranes. In the European genus these lobes are very stout, but I regret to say that I have been unable to examine sections under a microscope, or it would have been possible to give some data on this point with reference to the comparative thickness. Now whether the lobe has once formed part of the secondaries, and is drifting towards the vanishing point, requires considerable attention. But my idea (previous to examining sections) is that this is another means by which the hind wing is becoming less, and is precedent to the scalloped margin.

But to come to the scalloped margin once again. Let us examine the Malay genus, *Himantopterius*. Here, as is seen at a glance, the hind wings have assumed a very different aspect, for not only has the greater part of the membrane vanished, but some of the nervures are not present. These insects have a parallel form among the Neuroptera, and

indeed the appearance of the hind wing is so strikingly alike, that they were not placed with the Lepidoptera originally. But Westwood pointed out the tippets to the thorax, in addition to the arrangement of the neuration in the fore wings, being found in certain other undisputed Lepidoptera. They used to be located with the *Arctiidae*, but now are placed immediately before the *Psychidae*. Hampson speaking about them in his Indian Moths, says: "The veinlet in the cell and vein 1c of fore wing being more or less developed, show that they belong to the *Zygoenidae*, and the absence of mouthparts places them in the sub-family *Phaudince*, near *Pryeria*, while on the other hand they are allied to the *Psychidae*." But although the wing is so changed from the general type it is most remarkable that there is even here a scalloping, at least in *H. dohertyi*, and it would appear as if the wing has not yet reached its limit of narrowness. And most interesting to strengthen the position I have taken up the wing appears to have become atrophied from the anal, or at all events from the inner and not the costal margin, as the costal nervures appear to be present although far from normal.

This last instance is perhaps one of the most extreme cases of devolution of the hind wing in this direction. But there are a large number of other cases in which the hind wing is remarkably small, only the general appearance is not so altered; *Ocnogyna parasita*, *Lasioampa tremulifolia*, *Sparta paradoxaria* afford good examples, whereas some of the semi-apterous females of some species have the secondaries exhibiting very much smaller dimensions than the primaries, and in some few instances the secondaries have vanished, as is the case in *Biston alpinus* ♀ a near relative of our *Hispidaria*, which is totally apterous in the female. I think it is reasonable to suppose that at one period these semi-apterous or wholly apterous species were possibly winged, even if the wings were not of such high development as the males of those species now possess. Having as we have, such insects as *Hydilla palustris*, which has such comparatively rudimentary wings and yet being capable of flight, we have some ground for making such an assumption, as we here have a sort of intermediate step. One cannot put any strength into the argument that wingless moths are not represented among the fossils, for the reason already given, that fossils are exceedingly rare, and also that even if wingless moths did exist as ancestral types, their great scarcity compared with other winged forms would wholly account for their absence. If these wingless species were once winged, how are we to account for their present state. There are several lines of thought. They may possibly have been palatable to birds, and that as in mimicking species they needed protection, and that by becoming wingless they rendered themselves very inconspicuous and thus escaped. Or what seems more probable, that being heavily laden with ova they could use the wings but little, and as a consequence of disuse, a disappearance. In the majority of instances however, I do not wish to maintain this argument, but rather that those species which are showing a diminution in hind wing may be gaining power of flight

by this process. In most of the species with large wing areas, there is a slow flapping flight. It is true that they sometimes fly very high, but that would be no protection against birds. Whereas if, in the case of *Papilio* and *Euterpe*, the *Papilio* flew much slower than the *Euterpe*, the *Euterpe* might not escape its enemy, for the reason that its quick flight would not be recognized as that of the slower flying *Papilio*. This is of course *only a suggestion* as to the utility of such a process, such as I have been describing, and I admit I have no materials for ascertaining if such a hypothesis is correct with the two species given. It seems to me also that if the insect loses some wing membrane it has more nourishment to afford to what remains, and may possibly help it to attain a stronger flight.

Well, I think I have said enough, and I can only express surprise that you have listened to me so long. With such a pretentious title as the evolution of the hind wing, doubtless some of you had come here to-night somewhat prepared. But to read such a paper and not to hear a groan or feel a brick, is to say the least of it satisfactory to the reader, and I am bound to thank you for the long suffering way in which you have listened to me.

And now, if you will allow me, to say one word in conclusion. As this is the last ordinary meeting at which I shall have the pleasure and honour of being present, it is with very great regret that I beg to take leave of so active, energetic, and useful a Section as this gathering here to-night represents. From the day in June, 1896, when I was elected an Associate till to-night has been one long uninterrupted, unbroken series of intensely pleasurable evenings, not to mention the field and other excursions into various parts of the country, which I unhesitatingly look upon, and shall continue to look back upon, as the very acme of pleasure. Such evenings and such excursions could never have taken place, or at least made a success, unless there had been a thorough good fellowship among the members, and it is this same good fellowship that I feel so keenly I am about to be the loser by severing my active connection with this prosperous Section "F."

Quarterly Reports of the Sections.

SECTION "D."

FOR BIOLOGY (ZOOLOGY AND BOTANY).

July 20th, 1898.—Present 14 members and one visitor.

Exhibits.—*Epipactis palustris* by Mr. JACKSON. Some paper string, two abnormal larkspurs, and some specimens collected in the Alps, by Mr. TURNER. Some abnormal forms of ash leaves by Mr. BELL, and some Spiraea by Mr. MOTT.

Mrs. NUTTALL, B.Sc., then read a very interesting Paper on "Electric Light and Market Gardening." It showed that Electric Light might in some cases prove a very valuable auxiliary to market gardeners; the cultivation of lettuces was the case particularly noted; these might be ready for market nearly fourteen days earlier when subject to this artificial light for some hours nightly.

It further described the modifications of plant structure which were induced by it.

At the close Mrs. NUTTALL was heartily thanked for her Paper, and a discussion followed, and suggestions for experiments in private houses.

Mr. JOHN HARRISON forwarded a report of the excursion of June 25th to Burbage Wood, and in his absence it was read by the CHAIRMAN. Only four members went and few specimens were found.

September 21st.—Present 12 members and one visitor.

Exhibits.—*Helianthemum vulgari* and *Corydalis lutea*, from Huncote, by Mr. BELL. *Eucalyptus globulus*, leaves and fruit, by Mr. OUGH; also *Brayera anthelmintica*, *Cusso*, or *Kouso-Ruchu*, fruit and leaves. An oxalis by Miss HOTTINGER. A Longicorne, and a stained section of the stem and spine of *Rosa*, by Mr. TURNER. *Hibiscus affinis*—the plant in flower—by Mr. MOTT. A curious Polypore, from a cellar at Atherstone, by Miss BARBER.

The notes on the July excursion to Normanton were read by Mr. BELL.

Miss JARROM, 13, Fosse Road, and Mr. JOSEPH LANSDELL, The Gardens, Barkby Hall, were nominated members of the Section.

Dr. LAKIN sent an apology for not being able to be present.

Mr. MOTT then read his sketch of the Orders *Tiliaceæ* and *Lineæ* and illustrated it by specimens from his Herbarium—*Tilia parviflora*, *Tilia intermedium*, *Linum catharticum*, *Linum perenne* and *susitatis-simum*.

The arrangements for the Fungus Foray were left in the hands of the Chairman.

G. C. TURNER, *Chairman*.

SECTION "E."

FOR ZOOLOGY AND GEOLOGY.

July 9th, 1898.—Excursion to Barrow-upon-Soar and Mountsorrel.

Ten members and two visitors took part in this excursion, viz.: Members—Mr. H. ALFRED ROECHLING (Chairman), Dr. BENNETT, Mr. G. B. CHALCRAFT, Mr. T. B. COOPER, Mr. T. EDWARDS, Mr. W. J. HALL, Mr. W. KEAY, Mr. ARTHUR RUST, Mr. H. H. THOMSON, Mr. W. T. TUCKER. Visitors—Mr. J. W. GODDARD, Mr. H. F. TRAYLEN.

The Section visited first Messrs J. Ellis & Sons', Limited, Lime and Cement Works at Barrow-upon-Soar, under the guidance of Mr. Raven, their representative, and, after having inspected an open working in the lias and about half-a-mile of underground workings (delphs), they were shewn over the Cement Works and the interesting Testing Station, where light refreshments had been provided.

From Barrow the members proceeded along the private railroad to the Mountsorrel Granite Company's Works, where Mr. Harrington, the Company's representative, conducted the party through the very extensive workings of the Company. A very interesting hour was spent in this way, after which the Section was entertained to a very enjoyable tea, which the Mountsorrel Company, with their usual hospitality, had provided, and which brought this most successful excursion to a close.

July 23rd.—Excursion to Ketton and Collyweston.

Members present—Mr. H. ALFRED ROECHLING (Chairman), Messrs. T. EDWARDS, ARTHUR RUST, H. H. THOMSON. Visitors—Mr. F. J. HALL, and the following members of the Leicester and Leicestershire Society of Architects: Messrs. H. G. COALES, Market Harborough, J. F. J. GOODACRE, Leicester, S. HARRISON, Leicester, S. P. PICK, Leicester, J. TATE, Leicester.

As the district visited is of great interest to the architectural profession, the CHAIRMAN extended an invitation to the Leicester and Leicestershire Society of Architects to join the Section in this excursion.

Leaving Leicester at 12.50 p.m. the Section arrived at Ketton at 2.18 p.m., and after visiting the quarries of Major Braithwaite, under the guidance of his agent, Mr. Wing, the members proceeded to the quarries belonging to Mr. Molesworth, and drove thence to Collyweston, where they examined the quarries belonging to Messrs. William Close and Sons.

After tea at Ketton the members visited the beautiful old Church there and then returned to Leicester, arriving at 9.40 p.m.

September 12th.—Present nine members and two visitors.

Mr. W. J. HALL read a paper entitled “A Fresh-water Mussel.”

Commencing by giving the general characteristics and classification of the Mollusca, he went on to describe the family *Unionidae* (fresh water Mussels) with special references to the genera *Unio* and *Anodonta* and their distribution, the former having a world-wide range, the latter being more restricted.

The Author then introduced the subject of the Paper—*Anodonta cygnea*—the common Pond or Swan Mussel, describing its external characters, environments, normal posture, mode of locomotion, the opening and closing of the valves, and the structure of the shell, with its mode of growth. The muscular and nervous systems were explained, and the parts played by the mantle-lobes and gills in the function of respiration were given, followed by descriptions of the alimentary, vascular, and renal systems—the explanations being assisted by the exhibition of dissected specimens and diagrams.

The remainder of the paper was devoted to an interesting account of the parasitic existence of the larval form or Glochidium upon the bodies of live fish, and it was pointed out that this method of dispersal together with others, such as floods and currents, and the accidental insertion of the feet of wading birds and other creatures within the gaping valves, with the consequent rigid closure and transport, perhaps, to other waters, were largely accountable for the wide dispersal of such comparatively slow-moving animals. In conclusion, the range in time of the *Unionidae*, extending probably to the Devonian Period, was recorded—the remains

of an Anodont-like species termed *Anodonta jukesii*, being abundant in the Upper Old Red Sandstone in some parts of Ireland.

Mr. JONES, Mr. ROWLEY, Mr. PATTISON and Mr. PARRY then entered into an interesting discussion upon facts mentioned by Mr. HALL. The Author was then thanked for his lucid paper and welcomed as a new worker amongst the workers of the Section.

Mr. PATTISON exhibited a specimen of the common sea mussel with a pearl *in situ*, and a larger specimen with an injury to the shell and showing the process of repair.

The SECRETARY exhibited a specimen of the *Unio margaritifera* from which a black pearl had been taken.

H. A. ROECHLING, *Chairman*.

SECTION "F."

FOR ENTOMOLOGY.

June 17th, 1898.—The HON. SECRETARY read a paper on "The Variation and Distribution of the Aphodiina."

The paper was illustrated by a map, varieties of various species, photographs and drawings of the wings. After giving the characteristics and economy of the group, the distribution of the genus *Aphodius* throughout the whole world was fully dealt with; then the various lines of variation and some of their supposed causes were discussed; finally each species found in Britain was described with all its known varieties, and with all the localities in which it had been recorded.

In conclusion, the author stated that he was much indebted to Mr. C. B. HEADLY, F.E.S., for a lot of technical work in dissections, photographs and working out details, without which it would have been impossible to write the paper, also to the CHAIRMAN for drawings of the wings of several species, and to Mr. J. J. WALKER, F.E.S., CLAUDE MORLEY, F.E.S., H. ST. J. DONISTHORPE, F.E.S., F.Z.S., Prof. HUDSON BEARE, B.Sc., Messrs. B. TOMLIN, E. O. ELLIOTT, C. H. MORRIS, J. H. KEYS, W. W. ESAM, G. H. ROUTLEDGE, Drs. BAILEY, J. BENNETT, and many other leading Coleopterists in all parts of England, for their notes.

A long discussion ensued, in which the CHAIRMAN, Messrs. VICE, DIXON, HEADLY, and the AUTHOR took part, as to the causes of variation

and as to the distribution, the general opinion being with the author, that exporting of cattle was largely responsible for the latter, and that there was insufficient data to arrive at definite conclusions as to the causes of variation. The usual vote of thanks was carried.

Mr. DIXON gave some notes on a visit to Folkestone, of which the following is a brief abstract:—He stated, that, after a long spell of cold weather, May 14th proved a charming day, when *Pieris brassicae* and *Euchloe cardamines* put in appearance. During the week following *Arctia menthastris*, *Dicranura vinula* and the first larvæ of *Ennomos fuscantaria* arrived upon the scene. On the 27th *E. cardamines* was well in evidence, also the pupæ of *Bombyx quercus* and single specimens of *Tephrosia biundularia* and *Andrena cineraria*. On the last day of the month the first brood of *Aspilates citraria* began to appear.

In the early part of June he visited a distant spot; the fine morning filled the air with insects, and *Bombus muscorum*, *B. terrestris*, *B. lapidarius*, *B. cognatus*, *B. derhamellus* and *B. pratorum* were plentiful. The males of the last were also fairly numerous. *Andrena albicans*, *Osmia bicolor*, *Psithyrus rupestris* and *P. vestalis* flitted hither and thither. One specimen of *Bombylius major* was also secured.

Of Lepidoptera he saw or took good specimens of *Pieris rapæ*, *P. brassicae*, *Pararge negeera*, *E. cardamines*, *Lycæna icarus*, *Nemeobius lucina*, *Carterocephalus palemon*, *Thanaos tages*, *Argynnis euphrosyne* and *Syrichthus malvæ*. At ten o'clock he found a specimen of *Limacodes testudo* resting on a stem of grass while its wings expanded; this he was pleased to secure, as it was, as far as he knew, in a new locality. Near the same spot *Gorycia temerata*, *Fidonia atomaria*, *Macroglossa fuciformis*, *Euclidia mi* and *E. glyphica* flitted into the net, as also did *Pyrausta purpuralis*. He was exceedingly pleased with *C. palemon* and *N. lucina*, which were in capital condition, and of which he took a nice series.

A week later Beacon Hill produced an abundance of Hymenoptera at the "rhodo" bushes, but as none were new he left them to enjoy their sweets to the full extent. *Tephrosia crepuscularia*, *Euchelia jacobææ* and a few of the commoner dragonflies were the chief insects noted. By the middle of June *Hepialus lupulinus* was well out.

Towards the latter end of the month he said he again rambled abroad, this time in search of *Thecla pruni*. He then described how the bushes had been beaten to secure the larvæ of this now scarce insect, and spoke in very strong terms of the reprehensible practice, contrasting it with his own method of procedure, which resulted in securing for him both larvæ and pupæ of the desired insect. By the same means the larva of *T. betule* was taken. *Helioles arbuti*, *Hadena dentina*, *Fidonia piniaria* and others were among his captures. He described how the pretty spot, charming weather, and successful search all combined to make the outing most enjoyable.

After a discussion, a vote of thanks was carried unanimously.

June 20th.—Excursion to Saddington, by invitation of Mr. and Mrs. T. B. Pateman.

Notwithstanding the fact that two other Sections had excursions on, twenty-three members found their way to Saddington, where, thanks to Mr. W. A. Evans, the reservoir, boats, and island, were at the disposal of the visitors. Tea was partaken of on the island, and subsequently the members were entertained at supper by Mr. and Mrs. Pateman, the unanimous opinion being that, thanks to their hospitality and Mr. Evans' kindness, it was absolutely impossible to have spent a more enjoyable day. The Coleopterists did some good work; some of the better captures being *Bryaxis sanguinea*, *Philonthus quisquiliarius*, var. *dimidiatus*, *Anchomenus micans*, *Bembidium doris*, *B. flammulatum* (scarce), *B. obliquum* (rare), *Galerucella lincola*, *G. nymphaeae*. Some decent Hymenoptera and Lepidoptera were also secured.

July.—No Meeting.

August 27th.—International Congress of Zoology at Cambridge.

September.—No Meeting.

F. R. ROWLEY, *Chairman.*

Announcements.

GENERAL MEETINGS.

1898.

- Oct. 10.—PRESIDENT'S ADDRESS—"Electricity, and its development as an illuminant."
 „ 24.—Miss JANE HARRISON—"The Oracle at Delphi in relation to recent excavation."
 Nov. 7.—H. A. ROECHLING, Esq.—"Life in Large Towns and its Difficulties."
 (With lantern illustrations.)
 „ 21.—WILLIAM ARCHER, Esq.—"Garriek and his Circle."
 Dec. 5.—Prof. C. LLOYD MORGAN—"Intelligence and Instinct in Animals."
 „ 19.—Prof. VIVIAN B. LEWES—"Acetylene."

1899.

- Jan. 9.—ARNOLD DOLMETSCH, Esq.—"The Music of Shakspeare."
 „ 23.—A. H. PAGET, Esq.—Recital: "A Midsummer Night's Dream."
 Feb. 6.—Prof. CHURTON COLLINS—"The true use of Books."
 „ 21.—Prof. SILVANUS P. THOMPSON, D.Sc., F.R.S.
 Mar. 6.—Prof. T. HUDSON BEARE, M.Inst. C.E.—"Remarkable Engineering Achievements of the 19th Century."
 „ 20.—HENRY G. H. MONK, Esq., M.R.C.S.—"Bacteria."

SECTIONAL MEETINGS.

SECTION "A."

Chairman—Rev. HENRY GOW, B.A., St. James' Road.

Secretary—Mr. F. S. HERNE, Permanent Library.

1898.

- Oct. 4.—"Browning, as revealed by his own Poems."—("Evelyn Hope." "Abt. Vogler." "One word more." "Epilogue to Asolando." "Prospice.")
 Rev. H. GOW, B.A.
 Nov. 1.—"Browning's Dramatic Power."—("Pippa Passes.") Rev. CANON STOCKS, M.A.
 Dec. 6.—"Browning's Treatment of Fundamental Beliefs."—("A Death in the Desert." "Christmas Eve and Easter Day.") Rev. W. WHITAKER B.A.
 „ —Paper by Mr. C. J. BILLSON, M.A.

Rev. H. GOW, *Chairman*.

SECTION "D."

Chairman—Mr. G. C. TURNER, F.L.S., Parklurst, New Walk.

Vice-Chairman—Mr. W. A. VICE, M.B., F.E.S., 5, Belvoir Street.

Treasurer—Mr. T. CARTER, LL.B., Mill Hill Lodge.

Secretary—Miss READ, Westcotes Drive.

1898

Oct. 19.—Exhibits.

„ —Paper—"The Medicinal Plants of Leicestershire." C. LAKIN, Esq.,
L.R.C.P.

—Notes on Current Science. Members.

Nov. 16.—Exhibits.

„ —Paper—"Something about Galls." W. A. VICE, Esq., M.B., F.E.S.

„ —Study of Order *Geraniaceæ*. F. T. MOTT, Esq., F.R.G.S.

Dec. 21.—Exhibits.

„ —Paper—

„ —Notes on Current Science. Members.

G. C. TURNER, *Chairman*.

SECTION "E."

Chairman—Mr. H. A. ROECHLING, C.E., Highfield Street.

Secretary—Mr. O. T. ELLIOTT, 99, Melton Road, Belgrave.

1898.

Oct. 17.—Paper by Dr. F. M. POPE, "Some further remarks upon the Animal Cell."

Nov. 14.—Paper by Mr. EDWARDS on "The Geology of the Isle of Thanet."

Dec. 12.—Paper by Dr. F. W. BENNETT, "The Rocks of Charnwood Forest."

H. A. ROECHLING, *Chairman*.

SECTION "F."

Chairman—Mr. F. R. ROWLEY, F.R.M.S.

Vice-Chairman—Mr. W. A. VICE, M.B., F.E.S.

Hon. Secretary—Mr. F. BOUSKELL, F.E.S., Market Bosworth, Nuneaton.

1898.

Oct. 21.—Report of New Forest Excursion by Messrs. F. BOUSKELL, F.E.S., C. B. HEADLY, F.E.S., Prof. HUDSON BEARE, B.Sc.

„ —Paper by Mr. BROCKTON TOMLIN, F.E.S., on "The Coleoptera of the Llandaff District."

„ —Notes on Oribatidæ, by the CHAIRMAN.

Nov. 11.—Report on the 4th International Congress of Zoology so far as it affected Entomology, by the HON. SECRETARY.

„ —Paper by Mr. G. B. DIXON, F.E.S., "Notes on Rambles in Cornwall."

„ 25.—Paper by Mr. W. J. HALL on "The Structure and Life-History of the Cockroach." Illustrated.

Dec. 16.—Paper by Mr. H. St. J. DONISTHORPE, F.Z.S., F.E.S., on "All that is known about *Metoeus paradoxus*."

1899.

Jan. 3.—Paper by Mr. J. W. TUTT, F.E.S., on "Something about Variation."

„ 4.—Annual Dinner.

Feb. 3.—Paper by Mr. CLAUDE MORLEY, F.E.S.

„ 24.—Paper by Mr. W. J. KAYE, F.E.S., on "Three months in the West Indies."

March 7.—Paper by Prof. HUDSON BEARE, B.Sc., F.E.S., "The Coleoptera of the Isle of Wight."

„ 31.—Paper by Mr. F. BOUSKELL, F.E.S., "Some notes on Coleoptera, Parasitic or Inquiline on Hymenoptera."

April 21.—Address by the Chairman, Mr. F. R. ROWLEY, F.R.M.S.

May 19.—Paper by Mr. W. A. VICE, M.B., F.E.S., on "Something about the Diptera."

June 23.—Paper by Mr. J. WOOLEY.

F. R. ROWLEY, *Chairman*.

